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| EXAMINER | |
|---|---|
| DOAK, JENNIFER L | |

| ART UNIT | PAPER NUMBER |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/532,846 | TROMP, NIELS | |
| | Examiner | Art Unit | |
| | Jennifer L. Doak | 2872 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *19 July 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-5 and 7-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5, 7-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/7/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

After further consideration, the election/restriction requirement of 3/17/10 is hereby withdrawn.

### *Claim Rejections - 35 USC § 101*

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Dependent claim(s) 29, when analyzed as a whole, are held to be patent ineligible under 35 U.S.C. 101 because the additional recited limitation(s) fail(s) to establish that the claim(s) is/are not directed to an abstract idea, as detailed below:

Claim 29 is directed to "a data carrier provided with representing a program" that is "***loadable*** in an apparatus." The claim does not require that the program actually be loaded in any apparatus. Moreover, the steps listed are only required in the program, and not in the actual process of making of the invention. Any machine necessary to perform a program (and the claim does not require that the program is actually performed), which may be written and never used, is not required by the claim, and, due to the nature of the manner claimed, appears to be, if present at all, a nominal recitation. Correction is required.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14, 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 reads "at least one side surface between the first and the second sides" is so unclear as to be indefinite. It is unclear whether "one side" refers back to the antecedent basis of either the first side or the second side or newly identified "side." If it is referring to either of the previously identified sides, it is unclear whether this is with respect to a surface of a 3-dimensional side that is interior to the enclosure of the cavity or a function of another shape of the cavity. If it is referring to a newly identified "side," then it would greatly improve clarity to identify it as a third side.

All depending claims inherit the same deficiencies. Appropriate correction is required.

Further regarding claim 19, the second annular side has no antecedent basis.

For the purposes of examination, Examiner will interpret this "side" as an interior surface of a 3-D side.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 11-16, 18-21, 24-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Veeder (US 2152394).

Regarding claim 1, Veeder discloses a construction element (Fig. 13 – one of the "constructions" of Figs. 10-15, p. 3, col. 2, lns 50-51), comprising: at least one first side (45 - member) with at least one first opening (48 – ventilating aperture); at least one second side (41 - member) with at least one second opening (44 – ventilating aperture); at least one first cavity (Fig. 13 – i.e., the triangle slice between members 45 and 47) bounded between the first and sides (i.e., cavity is between members 41 and 45) and which is connected to the first opening (i.e., ventilating aperture 48 ventilates this area by the airflow); at least one second cavity (Fig. 13 – i.e., the triangle slice between members 41 and 47, on the left) bounded between the first and second side (i.e., cavity is between members 41 and 45) and which is connected to the second opening (i.e., 44 – ventilating aperture), with the first and second cavities at least partially overlapping (i.e., note a vertical line would pass through both cavities since there is vertical overlap between the two cavities); and at least one connection (i.e., member 47) between the first side and second side (i.e., member 47 is between members 45 and 41) which at least partially bounds the first and second cavities wherein the first side (i.e., members 41, 45, and 47 bound the cavities), the second side and the connection form a monolithic entity (i.e., the whole is a single entity) and at least one of the first and second cavities narrows towards the opening connected to it (i.e., as the cavity between members 47 and 45 narrows from it's widest point, at the top, it narrows towards the cavities).

Regarding claim 2, Veeder further discloses at least one of the first and second cavities is conical or pyramidal (i.e., see triangular cross-sectional shape which goes all the way around, therefore being conical).

Regarding claim 3, Veeder further discloses at least two beam-shaped connections (Fig. 13: 34, 40 – plates) between the first and second side, which at least partially bound the first and second cavities (i.e., bound on the top and bottom).

Regarding claim 4, Veeder further discloses the beam-shaped connections form generatrices (i.e., meaning forming a line, surface, or solid – in this case, there are no apertures in these surfaces) of a cone or ribs of a pyramid (i.e., plates 34 and 40 make solid surfaces of the conical cavities).

Regarding claim 5, Veeder further discloses the beam-shaped connections also form ribs of the construction element (Fig. 13 - i.e., 34, 40 plates form ribs, in that they stabilize and support the construction element).

Regarding claim 11, Veeder further discloses the first side and the second side are at a distance from each other (Fig. 13 - i.e., members 45 and 41 are not coincident).

Regarding claim 12, Veeder further discloses the first side is not parallel to the second side (i.e., note that members 41 and 45 are not parallel).

Regarding claim 13, Veeder further discloses the first side and the second side are substantially parallel (i.e., the word "substantially" does not quantify the amount by which any discrepancy may be taken; because it appears that member Fig. 13: 45 is at an approximately 45° angle to member 41, and this amount is less than or equal to half of a perpendicular, it is therefore taken as "substantially parallel" – moreover, both run generally upward and downward).

Regarding claim 14, as best understood, Veeder further discloses at least one side surface (i.e., a side surface at Fig. 13: 41 – member has an interior surface) between the first and the second sides (i.e., 47 is between 41 and 45).

Regarding claim 15, Veeder further discloses at least one of the side surfaces or sides is at least partly curved (i.e., member 41 makes a cylinder; member 45 makes a cone shape).

Regarding claim 16, as best understood, Veeder further discloses at least one of the side surfaces or sides is single-curved (i.e., member 41 makes a cylinder; member 45 makes a cone shape).

Regarding claim 18, as best understood, Veeder further discloses the surface of at least one of the first and second sides is annular (i.e., member 41 is annular around the element of Fig. 13 – thus 41 becomes a first annular side) and a first side surface and a second side surface are present between the sides (i.e., there is an interior surface of member 41 and interior surface of member 45 between the whole of member 41 and the whole of member 45).

Regarding claim 19, as best understood, Veeder further discloses the diameter of the annular first side (i.e., member 41) is greater than the diameter of the annular second side (i.e., 45 becomes the second annular side; Fig. 13: i.e., the diameter of member 41 is larger than the diameter of member 45).

Regarding claim 20, as best understood, Veeder further discloses the first side surface (i.e., exterior side surface of member 41) and the second side surface (i.e., exterior [to the 45, 41 cavity] side surface of member 45) have a greater surface than the first side or the second side (i.e., since this is in the alternative ["or"], it relates to only one of the first or second side; since the exterior surface of member 41 is the maximum radius, it is larger than the other surfaces).

Regarding claim 21, Veeder further discloses that at least one of the side surfaces is disc-shaped (i.e., plate 34 is tops a cylinder and therefore is a disc-shape).

Regarding claim 24, Veeder further discloses at least one side or surface of which is at least partially a reflecting surface (i.e., plate 34 is a reflecting plate, see p. 3, col. 2, ln. 73).

Regarding claim 25, Veeder further discloses one of the disc-shaped side surfaces comprises a reflecting surface (i.e., plate 34 is a reflecting plate, see p. 3, col. 2, ln. 73).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7-10, 17, 22, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veeder (US 5152394).

Regarding claims 7-10, Veeder does not explicitly disclose less than 10% of the surface of the first side is formed by openings; less than 10% of the surface of the second side is formed by openings; the first and second cavities comprise at least 50% of a volume of the construction element located between the first side and second side; the first and second cavities comprise 90% of a volume of the construction element located between the first side and second side.

However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller,* 105 USPQ 233 (C.C.P.A. 1955). In this case, the optimum range of cavities and ventilating apertures to surface area may be determined due to material and expectation of stresses on the materials for their use and size (e.g., in a telescope). Cavities and ventilating apertures reduce the overall weight of the mirror, while the members provide structure and stability to maintain proper rigidity (e.g., for imaging or for mere durability of the mirror). These calculable factors (e.g., weight versus structural stability) may be optimized by routine skill in the art. Moreover, no criticality of these values is found in the description of the present application.

Therefore, it would have been obvious to an ordinarily skilled artisan at the time of invention to optimize the ranges of the relationships between opening sizes, cavity sizes, and side

sizes so as to find the best and proper balance between weight and stability for the intended purpose of the mirror formed.

Regarding claims 17 and 22, Veeder does not discloses that at least one of the side surfaces or sides is multi-curved; or that there is a spherical element surface comprising the first side and second side.

However, it has been held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in the art when the change in shape is not significant to the function of the combination, *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). No criticality to these shape options are found in the present description. Benefits of different shapes include different structural strength capabilities, as well as the ability to house other elements inside the cavities for such purposes as better effective heat transfer, since some materials are better at transferring heat than air. Heat causes distortion in the mirror surface and heat waves from the surface distort the image received.

Therefore, it would have been obvious to an ordinarily skilled artisan at the time of invention to change the shape of the of a side to a multi-cure or to be spherical so as to change the structural strength capability and weight distribution of the overall mirror or to accommodate another material or element within the cavities so as to improve heat transfer so as to improve image quality.

Regarding claim 23, Veeder Fig. 13-embodiment does not explicitly disclose that the construction element is, at least partly, of aluminum. Veeder Fig. 13 embodiment is related to the Veeder embodiment of Figs. 1-2 as astronomical mirrors (title). The embodiment of Fig. 1

teaches an aluminum coating of the mirror surface (p. 2, col. 1, lns.13-15 - aluminum), which makes "an effective mirror surface" (ln. 17).

Therefore, it would have been obvious to an ordinarily skilled artisan at the time of invention to use aluminum in at least part of the construction element to obtain an effective mirror surface.

Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veeder (US 5152394) in view of Bertsche (US 5584621).

Regarding claim 26, all the limitations in common with claim 1 (or other claims addressed above) are hereby incorporated, Veeder does not explicitly disclose the method comprising the steps of: removing material, at least partly, located between the first and second sides via the first opening for the structure according to previous claims. Veeder and Bertsche are related as structure with interior cavities and machine for making complex surfaces with interior cavities (e.g., col. 1, ln. 32-34), respectively.

Bertsche teaches that, for example, an interior cavity can be machined (col. 1, ln. 32-34). Such drilling gives the teaching that ventilating apertures and making cavities results in the removal of materials from the sides and the cavities, including air; thus material is removed. Linear motor technology, such as that of Bertsche results in "linear axes ... being driven faster as cutting feedrates are being pushed higher" (col. 1, lns. 24-25), which results in higher production.

Therefore, it would have been obvious to an ordinarily skilled artisan at the time of invention to use a drilling method that removes material such as that taught by Bertsche so as to improve production.

Regarding claim 27, the combination requires all the limitations in common with claim 1 (or other claims addressed above) are hereby incorporated, further discloses at least one machining element (Bertsche, col. 1, ln. 14-16, i.e., milling machine); and at least one holder (i.e., "the tool [must] be kept at a particular angle with respect to the surface being machined," col. 1, ln. 27; therefore both must be held by a holder) for at least one workpiece with at least a first side and at least a second side (Veeder, the first and second side are continuously related to each other), and at least one control apparatus (Bertsche, col. 1, ln. 14-16, i.e., motor) for driving the at least one machining element (Bertsche, col. 1, ln. 14-16, i.e., milling machine) and the at least one holder (i.e., the relationship is maintained), wherein the at least one control apparatus is arranged (i.e., motor) for providing the structure of claim 1.

Regarding claim 28, the combination requires all the limitations at least one of the at least one machining elements comprises a multiaxial milling apparatus (Bertsche, col. 1, ln. 16).

Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veeder (US 5152394) in view of Bertsche (US 5584621) in further view of Jaques (US 4678293).

Regarding claim 29, as best understood, the Veeder-Bertsche combination does not disclose a data carrier provided with data representing a program loadable in a programmable apparatus, which program comprises program code for carrying out when loaded in an apparatus and providing the structure according to at least claim 1. The aforementioned combination and Jaques are related as milled mirrors.

Jaques discloses that milling machines can be programmed by a computer (col. 2, lns. 14-18 - computer). The benefit of a computer control is improved precision due to the removal of human error.

Therefore, it would have been obvious to program the milling machine, as in Jaques, to make the mirror produced by the Veeder-Bertsche combination so as to prevent human error in the making thereof.

## *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer L. Doak whose telephone number is (571)272-9791. The examiner can normally be reached on Mon-Thurs: 7:30A-5:00P, Alt Fri: 7:30A-4:00P (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. L. D./
Examiner, Art Unit 2872

/Jennifer L. Doak/
Examiner, Art Unit 2872